

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 30 and 32-44 are presented for consideration. Claims 30 and 32 are independent. Claims 17-29 and 31 have been canceled without prejudice or disclaimer. Claim 30 has been amended to clarify features of the subject invention, while claims 33-44 have been added to recite additional features of the subject invention. Support for these changes and claims can be found in the application as originally filed. Accordingly, no new matter has been added.

Applicants request favorable reconsideration and withdrawal of the rejections set forth in the Office Action dated March 1, 2007.

Claims 17-32 were rejected under the judicially created doctrine of statutory obviousness-type double patenting as being unpatentable over claims 1-15 of U.S. Patent No. 6,949,755. Claims 17-32 were also rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,249,016 to Tanaka. Applicant submits that the cited art does not teach or suggest many features of the present invention, as previously recited in these claims. Therefore, these rejections are respectfully traversed. Nevertheless, Applicant submits that independent claims 30 and 32, for example, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 30 recites an exposure apparatus for exposing a substrate to a pattern, the apparatus detecting a position of a target mark out of a plurality of marks, disposed with respect to each shot of the substrate to obtain a position of a shot. The apparatus includes a stage configured to mount the substrate and to be moved, a scope configured to sense an image of the substrate at a first magnification and an image of the

substrate at a second magnification higher than the first magnification, a processor configured to extract, from an image sensed by the scope at the first magnification, a position of a first mark out of the plurality of marks and a feature of a region outside the first mark, to identify the first mark based on the extracted feature, to extract, from an image sensed by the scope at the second magnification, a position of the target mark, to evaluate reliability of the extracted position of the target mark, to select a second mark, instead of the target mark, from the plurality of marks as a new target mark based on the identified first mark, if the evaluated reliability is less than a threshold, and to extract a position of the selected second mark from an image sensed by the scope at the second magnification, and a controller configured to control a position of the stage based on the extracted position of the second mark.

In another aspect of the present invention, independent claim 32 recites a method of detecting a position of a target mark out of a plurality of marks in a region of an object to obtain a position of the region of the object. The method includes steps of sensing a first image of the object at a first magnification, sensing a second image of the object at a second magnification higher than the first magnification, extracting, from the first image, a position of a first mark out of the plurality of marks and a feature of a region outside the first mark, identifying the first mark based on the extracted feature, extracting, from the second image, a position of the target mark, evaluating reliability of the extracted position of the target mark, selecting a second mark, different from the target mark, from the plurality of marks as a new target mark based on the evaluated reliability and the identified first mark, and extracting a position of the selected second mark from an image sensed at the second magnification.

Applicant submits that the cited art does not teach or suggest salient features of the present invention, as recited in independent claims 30 and 32.

Regarding the double patenting rejection, the Examiner takes the position that the selection of a plurality of marks as a new target mark, in accordance with the present invention, would have been anticipated by the claims of the '755 patent for the purpose of providing multiple measurement. Without conceding the propriety of this contention, and solely to expedite prosecution, Applicant has amended claim 30 to define the features of evaluation of reliability of the extracted position of the target mark, selection of the second mark, instead of the target mark, from the plurality of marks as a new target mark, based on the identified first mark, if the evaluated reliability is less than the threshold. Applicant submits, therefore, that the feature of substitution of the target based on the reliability of the extracted position of the target marks is not anticipated by the claims of the '755 patent.

The Examiner also discusses that the Tanaka patent discloses forming a plurality of marks as target marks. Applicant submits that the Tanaka patent shows that it is known to utilize pre-alignment marks disposed out of a shot array so that alignment marks WMR, WML in each shot can be utilized. In response to the Examiner's position, Applicant has amended claim 30 to define the features of a plurality of marks (for example, a first mark, a target mark and a second mark) are utilized with respect to each shot.

The Examiner further discusses that the recitation with respect to the manner in which the claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus. In response, Applicant submits that the evaluation of reliability of an extracted position of a target mark, the selection of a second mark, instead of a target mark, from a plurality of marks as the new target mark, based on the identified first mark, if the evaluated reliability is less than the threshold, recite structural recitations which distinguish the present invention from the cited art.

Still further, the Examiner discusses that the motivation for any changes to the cited art would be that it would have been obvious to extract a position of a selected second mark from an image sensed by a scope at a high magnification for the purpose of ease in viewing of the mark. Applicant submits, however, that the amended claims relate to the selection from the plurality of target marks with respect to each shot as the features of evaluation of reliability of the extracted position of the target mark, the selection of the second mark, instead of the target mark, from the plurality of marks as the new target mark based on the identified first mark if the evaluated reliability is less than the threshold. Applicant submits that neither the '755 patent nor the Tanaka patent teaches or suggests such features of Applicant's present invention.

For the reasons set forth above, Applicant submits that the cited art should not be read to anticipate or render obvious Applicant's present invention, as recited in independent claims 30 and 32.

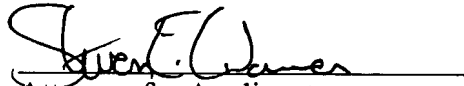
For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 30 and 32, is patentably defined over the cited art.

Dependent claims 33-44 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in independent claim 30. Further individual consideration of these dependent claims is requested.

Applicant submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and an early Notice of Allowance are also requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Steven E. Warner", is written over a horizontal line.

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